

## **REMARKS**

Claims 1-28 are now pending in the application. Claims 1-28 stand rejected. Claim 28 has been cancelled herein. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

## **DRAWINGS**

The undersigned gratefully acknowledges Examiner's acceptance of the drawings filed with the application on September 8, 2003.

## **REJECTION UNDER 35 U.S.C. §§ 102 AND 103**

Claims 1, 2, 4, 6-8, 10, 12, 13, 15, 17-19, and 21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Pavlidis (U.S. Pat. No. 6,854,879; hereinafter "Pavlidis"). Claims 3, 9, 11, 14, 20, 22-25, 27, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pavlidis in view of Elli Angelopoulou (*The Reflectance Spectrum of Human Skin*; hereinafter "Angelopoulou"). Claims 5 and 16 stand rejected as being unpatentable over Pavlidis in view of Kataoka (*Development of a Skin Temperature Measuring System for Non-contact Stress Evaluation*; hereinafter "Kataoka"). These rejections are respectfully traversed.

At the outset, Applicants note that independent Claim 1 has been amended to recite:

a processor adapted to receive an image of the subject from a camera, adapted to identify a first spectral reflection of the subject when the subject is unstressed and adapted to identify a second spectral reflection of the subject when stressed; and

the processor further adapted to compare an area of the image with the first and the second spectral reflections and adapted to indicate whether the subject is experiencing physiological stress based on which of the spectral reflections the image more closely coincides.

Applicants also note that independent Claim 12 has been amended to recite:

observing an image of the subject with a system, the subject to include a first spectral reflection when the subject is unstressed and a second spectral reflection when the subject is stressed;

comparing an area of the image to the first spectral reflection with the system;

comparing the area of the image to the second spectral reflection with the system; and

determining with the system with which of the spectral reflections the area of the image more closely coincides to detect if the subject is experiencing stress.

In addition, independent Claim 23 had been amended to recite:

obtaining an image of a subject;

identifying a first and a second area of skin of the subject, the first area to be unlikely to blush, the second area to be likely to blush;

comparing the first and the second areas of skin; and

indicating whether the subject is experiencing physiological stress based on an attenuation at a pre-selected frequency of a light spectrum reflected from the first and the second areas of skin.

Applicants respectfully assert that these features as claimed are not taught or disclosed by either Pavlidis, Angelopoulou or Kataoka, either alone or in combination.

At best, Pavlidis appears to disclose a system for polygraph testing that converts a thermal facial image of an individual 30 into a visualization of blood flow rate in the

person's face to determine during the polygraph testing if the person is lying (see at least Column 5, Lines 51-65 and Column 6, Lines 36-45). The system of Pavlidis is based purely on thermal energy. Pavlidis does not teach or disclose whatsoever determining physiological stress based on spectral reflections, as claimed in Applicants' invention; and it would be improper to modify Pavlidis to arrive at Applicants' invention, as there is no suggestion in Pavlidis to use spectrum reflections. In addition, Pavlidis teaches away from Applicants' invention, as Pavlidis teaches a cooling of the cheeks in response to stimulus and measuring the blood flow from the cheeks to the periorbital region 34 around the eyes 35 to determine if the individual 30 is anxious (see at least Column 5, lines 52-65). Thus, Pavlidis does not disclose whatsoever measuring a blush that is characterized by increased blood flow to the cheeks. In addition, it would be improper to modify Pavlidis with Angelopoulou, as Angelopoulou expressly deals with human skin reflection and not thermal imaging. Thus, these two references take basically opposite approaches to detecting stress in an individual.

With regards to Kataoka, Kataoka discloses the use of an infrared camera to measure the temperature of a subject (see Page 942, Column 1). Kataoka further does not teach or disclose whatsoever the use of spectral reflection to determine physiological stress; rather Kataoka deals with measuring the temperature of a person's skin after being exposed to stimulus.

As neither Pavlidis, Angelopoulou nor Kataoka teach or suggest Applicants' invention as claimed, Applicants respectfully submit that independent Claims 1, 12 and 23 are patentable and in condition for allowance. In addition, as Claims 2-11, 13-22 and

24-28 depend from either independent Claims 1, 12 or 23, Applicants respectfully submit that these claims are also patentable and in condition for allowance.

Reconsideration and withdrawal of these rejections are respectfully requested.

### **CONCLUSION**

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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